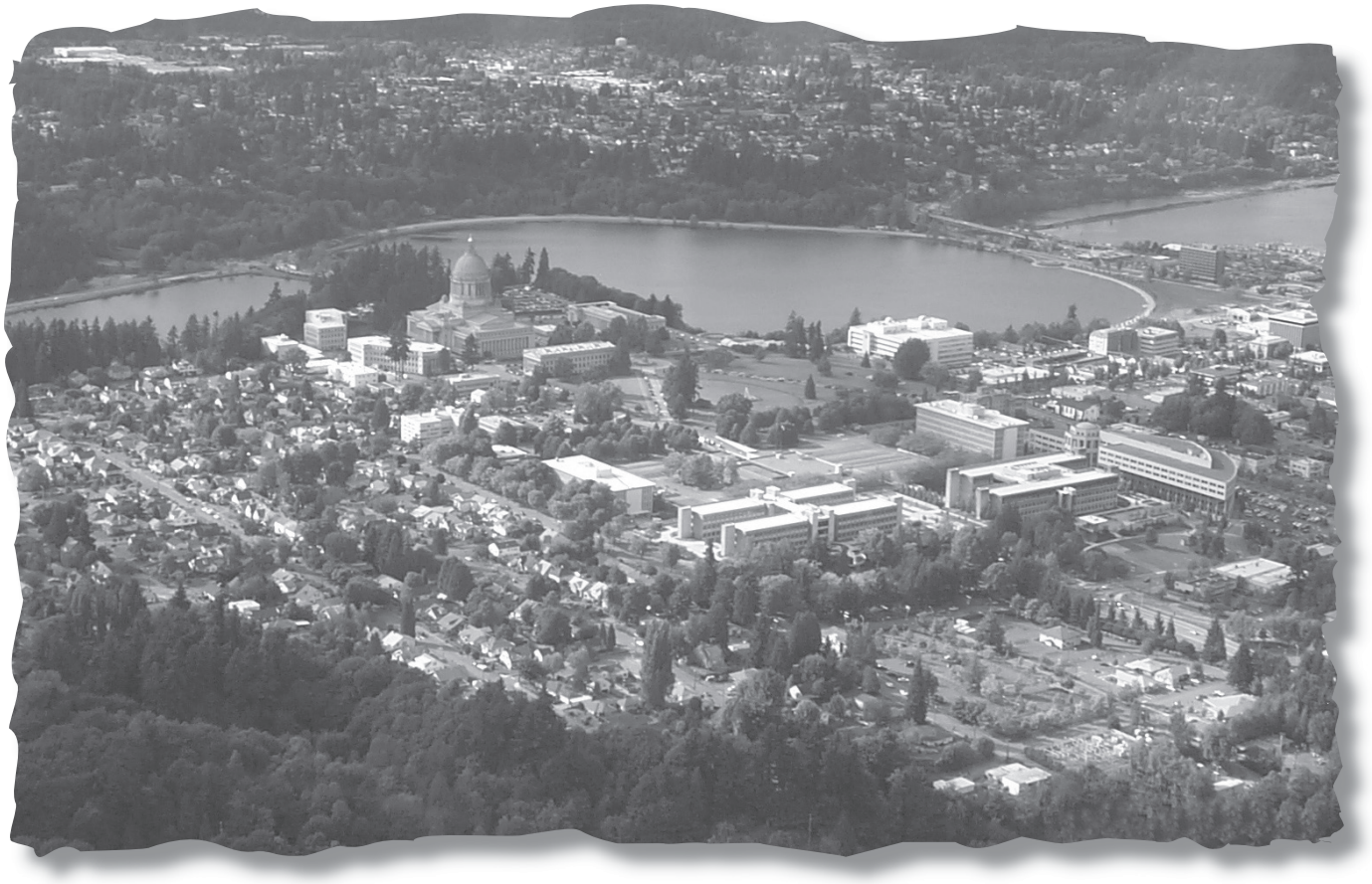
WST2

Washington State Technology Transfer



Washington State Department of Transportation

A Technical Digest of the
Washington State Department of Transportation (WSDOT)
and the Local Technical Assistance Program (LTAP)
Issue 90, Spring/Summer 2006

Washington State Technology Transfer

WST2 Washington State Technology Transfer
is published quarterly without fee by

WSDOT Highways & Local Programs
Washington State Technology Transfer Center
310 Maple Park Avenue SE
PO Box 47390
Olympia, WA 98504-7390

E-mail: WST2Center@wsdot.wa.gov
Home Page: http://www.wsdot.wa.gov/TA/T2Center/T2hp.htm

Requests for subscriptions, change of address, and other subscriber services should be addressed to schmidw@wsdot.wa.gov, or phone (360) 705-7386, or WST2 Center, PO Box 47390, Olympia, WA 98504-7390. Subscriptions are distributed free of charge.

Issue 90, Spring/Summer 2006

POSTMASTER:
Please send address changes to:
WST2 Center
PO Box 47390
Olympia, WA 98504-7390

Include both old label and new address.

Article contributions, questions, or comments are welcome. Please contact Brian Walsh, P.E., Technical Services Manager, PO Box 47390, Olympia, WA 98504-7390; phone (360) 705-7387; fax (360) 705-6858; or e-mail walshb@wsdot.wa.gov

Editor reserves the right to refuse to publish and to edit articles to conform to the standards of our publication.

The opinions expressed in articles are not necessarily those of the editor.

Cover photo: *An aerial view of the Washington State Capitol Campus in Olympia where the Region 9 and 10 LTAP Conference was held in June 2006.*

The Local Technical Assistance Program (LTAP) is a national program financed by the Federal Highway Administration (FHWA) and individual state transportation departments. Administered through Technology Transfer (T2) Centers in each state, LTAP bridges the gap between research and practice by translating state-of-the-art technology into practical application for use by local agency transportation personnel.

Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of WSDOT or FHWA. All references to proprietary items in this publication are not endorsements of any company or product.

Washington State Department of Transportation

U. S. Department of Transportation
Federal Highway Administration

Contents

Washington State LTAP/T2 Center Hosts Regional LTAP Meeting

The Washington State LTAP (Local Technical Assistance Program) Center, also known as WST2, hosted the 2006 LTAP Regional Meeting in Olympia on June 6-8, 2006.

The Washington State LTAP is part of LTAP Region 10 which includes centers in the states of Oregon, Idaho, Alaska, and Utah. Region 9 (California, Nevada, Hawaii, Arizona) traditionally hosts this annual joint region meeting in the alternate years. This meeting saw the attendance of a third region, aptly named Region 3, and included LTAP center representatives from West Virginia, Pennsylvania, and Delaware.

Regional meetings usually involve two days of aligning the individual unique programs within each LTAP Center with the National LTAP Program housed in the Federal Highway Administration, Office of Professional and Corporate Development. Representatives from the Federal Highway Administration attend the meeting to communicate the mission and help interpret the changing face of Federal involvement in local agency transportation issues. The LTAP mission has been and will continue to be the delivery of technical transportation services, mainly professional and technician training, and technical engineering assistance to local agencies in all 50 states and tribal governments. Topics covered at this Olympia meeting included federal funding implications attached to SAFETEA-LU legislation, highlights of each Center's accomplishments in the last year, and most importantly the commitment to continue to improve on reporting measurements that show the value of the program which is critical to funding that comes from Congress/ Executive Branch.

Highlights of this meeting included a WSDOT-led tour of the second Tacoma Narrows Bridge which is under construction at this time. Rick Singer, WSDOT Tacoma Narrows Office, presented an excellent talk (photo at left) on many aspects of the bridge including history of the first bridge and current challenges with keeping the second bridge on schedule.

Operations of the second Tacoma Narrows Bridge (due to open in mid-2007) will employ new tolling technology to finance the bridge. The bridges together represent a vital link between the Olympic Peninsula and Tacoma as well as key population centers on the east side of Puget Sound including Seattle.

▲

WSDOT Offers Grants for Pedestrian and Bicycle Transportation Projects

Communities across the state have an opportunity to increase safety for bicyclists and pedestrians through two grant programs that are managed by the Washington State Department of Transportation (WSDOT). A total of $14 million in grants is available through state and federal program funds for local bicycle and pedestrian projects. WSDOT has issued a "call for projects" that support walking and biking.

In 2005, the Governor and Washington State Legislature increased the state's role by providing funding that supports pedestrian and bicycle safety and safe routes to school projects. In addition, the Federal Highway Administration (FHWA) established funding for the safe routes to school program.

The Safe Routes to Schools program was created to provide children a safe, healthy alternative to riding the bus or being driven to school. This program has $7 million of federal funds available to public agencies. Eligible projects are those within two-miles of primary and middle schools (K-8), and that address engineering solutions, educational programs, and law enforcement efforts. Applications for Safe Routes to School project grants are due to WSDOT on October 2, 2006.

Another $7 million in state funds is available through the Pedestrian and Bicycle Safety program. This program aids public agencies in funding projects that improve pedestrian and bicycle safety. Eligible projects may include engineering solutions, educational programs, and enforcement efforts. Pedestrian and Bicycle Safety project grant applications are due to WSDOT on September 20, 2006.

More detailed information about these grant programs and the application process is available on WSDOT's websites at:

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Ped_Bike.htm

http://www.wsdot.wa.gov/TA/ProgMgt/Grants/Safe_Routes.htm

For additional information, please contact Charlotte Claybrooke, Safe Routes Program, (360) 705-7302, or Paula Reeves, Pedestrian and Bicycle Safety Program, (360) 705-7258.

▲

WSDOT Standard Specifications for Local Agencies — A New Look

The Division 1-99 specifications have a new look!

At the 2005 APWA Spring Conference, the APWA-WA board, on the recommendation of the Division 1 subcommittee, decided to remove the APWA Division 1-99 Supplement from the 2006 WSDOT/APWA Standard Specifications book, and convert it into separate General Special Provisions (GSPs). This decision had the full support of WSDOT Highways & Local Programs (H&LP).

The APWA Division 1 subcommittee formed a Task Force which converted and updated the specifications to Local Agency GSPs. These GSPs are now available and may be downloaded from the Internet. The new GSPs and website were "rolled out" in a technical session at the 2005 Fall conference, to great acclaim.

You now have a library of well-written, tested specifications from which to choose. This new setup has many benefits:

- The Division 1 subcommittee can now update, revise, and add GSPs in a timely, responsive fashion – based on your needs and input.
- Local Agencies may pick and choose which APWA GSPs they wish to use – they do not have to be used as one package.
- You can choose from multiple options of one GSP (see GSP 1 04.6 for example).
- You can adjust variables using the GSP fill-ins just like WSDOT GSPs (see GSP 1 04.6 for example).
- Since these GSPs are intended for you to download and integrate with your project's Special Provisions, there is one less separate place where Division 1 specifications are found, which will reduce confusion as well as potential for duplication and/or conflict among all project specifications.
- All the GSPs, unless otherwise marked, are approved for use on projects with FHWA funding. Because of the new multiple options and fill-ins, you have more choices than you did previously.

Remember, if you have a project with FHWA funds, any revisions to your Local Agency Division 1 specifications must be identified and submitted for approval to H&LP prior to submittal of the PS&E. The review and approval by H&LP may take some time, as they are required to assure that the revision doesn't jeopardize your FHWA funding. If you instead submit your specifications to the Division 1 subcommittee, they can:

- combine your ideas with other agencies, and provide choices;
- guide specifications through the WSDOT H&LP approval process; and
- make your specifications available to other local agencies, so we all help each other.

These new Local Agency General Special Provisions (GSPs) are available for you to download from the WSDOT website. You can find them on the WSDOT Amendments/GSPs page, or you can go directly to **http://www.wsdot.wa.gov/partners/apwa/**

The APWA Division 1 subcommittee will continue to work on new and revised Local Agency GSPs, and we want your input and ideas. Call or e-mail one of us on the committee:

Kristina Nelson
253-591-5787
knelson@cityoftacoma.org

Gretchen Johnson
425-455-9720
gjohnson@kbacm.com

▲

Surety Bonds, Escrow Accounts, and the DOT

by Jim Seitz, Transportation Specialist,
Association of Washington Cities

Background

Within the past year, the Washington State Department of Transportation (WSDOT) has revised its application forms for cities, the private sector, and other public sector entities that will be performing utilities related work within WSDOT highway right of way.

A Change in Policy

The policy that has changed regards work that a city must perform outside of city limits, but within WSDOT right of way (i.e., sewer or water lines that extend beyond city limits). Previously, cities had the option to "pledge" their local gas tax distributions in lieu of procuring a blanket bond or a surety bond. The local gas tax distribution option has been eliminated. This has led to concerns among the city family that cities will be required to seek a surety bond or blanket bond in addition to their requirement for their contractor to secure bond. The effective result from a city point of view is requiring double bonding and an additional public sector cost.

From a state point of view, WSDOT only has a relationship with the city and therefore has a reasonable expectation of the city, which is acting as a permit applicant, to carry a bond or some form of financial accountability to the state.

Note: *Within city limits, cities continue to be the permitting agency for right of way work and WSDOT continues to be responsible for the highway surface.*

A Workable Solution – Establish an Escrow Account

AWC and WSDOT staffs have met on this issue and have also discussed the city relationship with WSDOT regarding utilities work in general. In review of available options, taking advantage of the long standing option to establish an escrow account is the best alternative to securing a surety or blanket bond. This has the advantage of keeping city dollars local and bearing interest. Once established, the escrow accounts will typically be in effect for two years after the completion of the project.

Other suggestions for having a more effective relationship between cities and WSDOT were identified by the groups:

- Outside of city limits, a good business practice for cities is to contact WSDOT and seek co-approval that the contractor has satisfied all project requirements before releasing the contractor.
- Within city limits, WSDOT would like to review and concur with any permitting of utility installations on state highways that involves open cutting of the paved roadway. As a courtesy to WSDOT, the city family should bear in mind that WSDOT regional offices are centrally located and cannot be expected to make long distance trips on very short notice.

WSDOT is in the process of updating their *Utilities Manual* with an expected release next summer. As a consequence of our meeting, WSDOT will highlight the Escrow Account option for cities within its Sureties chapter. This will improve consistency across Washington State. In addition, AWC has committed to notifying the appropriate city staff once the *Utilities Manual* is completed.

▲

Research Notes

Transportation-Efficient Land Use Mapping Index (TELUMI)

Background

Phases 1 and 2 of this research highlighted the importance of local land-use regulations in implementing transportation-efficient development. Land uses are transportation efficient if they support the use of alternative travel modes (carpooling, vanpooling, walking, bicycling, and transit), while reducing the need to drive alone. The researchers found that areas that had zoning and development regulations in place were able to implement transportation-efficient development, but those that did not were not as successful. As a basic tool for guiding development, regulations work. In addition to regulations, a variety of other actions are used to implement transportation-efficient development. Design review programs were particularly effective, as were other incentives.

The purpose of this project, Phase 3, was to develop an urban form index for the Central Puget Sound Region that could be used to evaluate existing land use patterns and travel behavior and transportation systems in general and develop an index which could be used to support decision-making for prioritizing and programming transportation investments.

The Problem

This third phase of the Integrating Land Use and Transportation Investment Decision-Making project culminated with the Transportation Efficient Land Use Mapping Index (TELUMI). The objective of this last phase was to devise a conceptually simple tool that operationalized the complex relationship between land use and travel behavior.

To be a useful tool, the TELUMI required systematic construction, based on extensive review of past research, as well as new studies and substantial inputs from national and local experts in land use and transportation. This report made explicit the conceptual and technical frameworks employed in the development of this work.

What We Did

TELUMI evaluated the impacts of different land-use variables on transportation system efficiency by using maps and quantitative data. Maps and data are available for the urban growth areas (UGAs) of the Puget Sound region (King, Pierce, Snohomish, and Kitsap counties).

The TELUMI is a set of maps that depicts how the region's urban form relates to overall transportation system efficiency as shown in the example in Figure 1. Nine map layers represent the effects of individual land-use variables on transportation efficiency. They include density (residential and employment), mix of uses (shopping and school traffic, the presence of neighborhood centers (NC)), network connectivity (block size), parking supply (amount of parking at grade), pedestrian environment (slopes), and affordable housing. The tenth layer is a composite index, which takes into account the relative effects of each of the nine variables on transportation efficiency, based on a statistical analysis that modeled the relationship between the land-use variables and King County bus ridership.

Each land-use variable is mapped using three categories, which define zones of high, latent, and low transportation efficiency (TE) (see Table of TELUMI Measures and Thresholds). High TE values correspond to many, and convenient, transportation options, including transit, non-motorized, and other non-SOV travel options.

Low TE corresponds to few transportation options beyond single occupant vehicle (SOV) travel. Latent TE indicates that travel options remain limited, but that land-use conditions in these zones are favorable enough to permit easy and effective increases in future travel options — either via transportation system investments, demand management or other programmatic actions, or land-use changes. From a policy planning and programming perspective, zones in latent TE present the greatest opportunity for high returns on future investments in land use and transportation systems.

TELUMI Measures and Thresholds

Domain	Measures	Transportation Efficiency (TE) Thresholds		
		Low	Latent	High
Density	Residential Area (DU/net acre)	<6	6-10	>10
	Employment Density (employees/non-resdential acre)	<30	30-70	>70
Mix of Uses	Proximity of groups to destinations	Presence of neighborhood cluster (restaurant, retail, grocery) = high		
	Trip generation rates (number of school and shopping trips)	0	1-455	>455
Network Connectivity	Average street-block size (acres)	>10	10-6	<6
Parking Supply and Management	Percent of at-grade parking lots in commercial areas	>75%	35-75%	<35%
Pedestrian Environment	Topography	>5%	2.5-5%	<2.5%
Affordable Housing	Net percent of housing below countywide median	<25%	25-47%	>47%

What We Learned

The composite layer of the TELUMI in King County yields challenging information on the transportation efficiency of present land use conditions. Focusing within King County's UGA, for example, the areas with high and latent TE are small, at 8 and 9 percent, respectively. This is both good and bad news. The fact that existing areas with many transportation options are small means that future investment and/or policy changes can be targeted to small geographic areas and, thus, involve relatively few targeted populations and facilities. But the large areas with low TE (83 percent of King County within the UGA) are likely to be difficult to upgrade without substantial investment.

Second, however, the TELUMI shows that high and latent TE areas contain a high proportion of residential units and employment. More than 40 percent of the residential units, and nearly 80 percent of the employment in King County's UGA, are in high and latent TE areas. This indicates that a good proportion of residential and employment activities are concentrated enough already to support many travel options. Future focus on and investment in latent TE zones (with 23 and 30 percent of the King County residential units and employment, respectively) should substantially increase travel options for a sizeable portion of the population.

Third, 1-km buffers along King County's freeways and primary streets show that only 20 percent of these facilities are in areas of high and latent TE. This suggests that the road network may be out of balance with, or not supportive of, adjacent land use patterns. This finding raises difficult questions, since many of these facilities can be major bus corridors. However, the calculations measure only the presence or absence of transportation facilities, not their capacity. Further study is needed to relate transportation systems' capacity to land-use conditions — for instance, calculating areas at the different TE levels that are related to different levels of bus transit service.

Finally, analyses of five sample areas used in the development of the TELUMI support many of the assumptions made during the course of this project. (The sample areas are Wallingford and Queen Anne in Seattle, Downtown Bellevue, Downtown Kirkland, and the Crossroads area of Bellevue). With only 15 percent of its area having high TE, the suburban neighborhood of Crossroads is associated with the fewest and least convenient non-SOV transportation options of all sample areas. Downtown Kirkland comes next, with 33 percent of its area having high TE; while in downtown Bellevue, Wallingford, and Queen Anne, more than 70 percent of their areas have high TE. Interestingly, in Crossroads and Kirkland, 34 and 38 percent of their areas have latent TE, respectively, a finding that supports the high potential that these two neighborhoods or districts are commonly believed to have for future transportation efficiency.

What the Researcher's Recommend

The TELUMI is a tool to test the potential impacts of changes in one land-use variable (such as employment density or amount of parking at ground) on travel options, thereby providing policy makers with a way to assess the relative power of different investments, programs, or policy/regulatory changes in the use of transportation facilities. While the TELUMI now shows how to rate areas of the Puget Sound for their existing transportation efficiency, it can and should also be used to set goals for future transportation efficiency and to monitor progress over time. Changes in the values of such land-use variables as employment density or amounts of parking at grade can be assessed in terms of their impact on the region's overall transportation efficiency. Such changes can be targeted to the entire region or to specific areas such as Designated Urban Centers or the areas along or near primary transportation facilities.

The visual dimension of the TELUMI's maps make the tool an attractive means of communication with all audiences, while it's quantitative capabilities can speak to transportation and urban planning professionals. Lay audiences can quickly grasp where zones with latent TE are, and how feasible changes in land use might be in these specific areas to improve transportation options. Professionals can then model the effects of the changes on transportation systems.

The TELUMI's applicability to planning/decision making processes concerned with general transportation issues can also be further focused on transit use, distinguishing, for example, between bus transit and light rail options. It can also be extended to other land use-related issues such as environmental planning, watershed analysis, brown field redevelopment, or the management of public utilities.

TELUMI can be useful in a number of planning contexts, such as:

- Assist in the development of Commute Trip Reduction and Transportation Demand Management (CTR/TDM) programs.
- Use in regional or local planning processes such as plan development, alternatives analysis, center designations, Comprehensive Plan review/update process, and use of design guidelines.
- Use to prioritize transportation investments (regional Transportation Improvement Programs (TIPs) and Congestion Mitigation and Air Quality plans (CMAQ), corridor project funding, and transit funding) in areas that best support those investments.

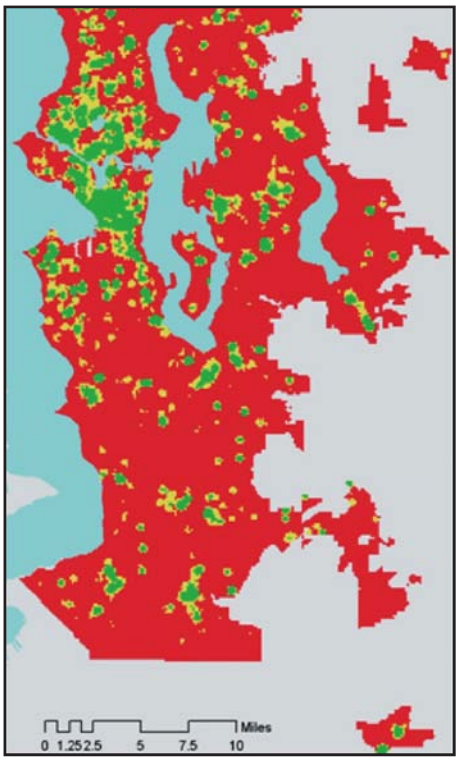
Summary of Implementation

WSDOT recognizes that local land use decisions impact the total efficiency of existing and planned investments in the transportation system. Until this research, a methodology or tool did not exist that could give quantitative guidance on what and where investments might be most efficiently made in the region.

The project took a methodology – cartographic modeling – that had been recently developed for environmental analysis and applied it to the land use and transportation relationship. Although the concept is simple and the results are easy to communicate and use, data development and calculations need time and testing to ensure they reflect the land use and transportation relationship accurately.

Transportation planners in the Puget Sound Region can use TELUMI during the development of corridor studies and Environmental Impact Statements. WSDOT's Environmental Affairs Office has shown interest in adopting the TELUMI methodology for environmental analysis.

Figure 1
Transportation Efficient Land Use Mapping Index[1]



[1]*King County – The Index is also available for the entire Puget Sound region, including Pierce, Snohomish, and Kitsap Counties. Green indicates high transportation efficiency; yellow and red show areas in latent and low transportation efficiency, respectively.*

This project has value for department planners in the Puget Sound Region, as WSDOT looks to prioritize and program various investments. TELUMI's set of maps depicts how the region's urban form affects overall transportation system efficiency. TELUMI can be used to assess the impact of land use on travel behavior and transportation systems in general, which can be used to support decision-making for prioritizing and programming transportation investments.

Presentations have been made to the Puget Sound Regional Council's staff, as they are interested in using the TELUMI in the development of Vision 2020 Plan. The tool was presented at the annual conference of the American Planning Association of Washington State, and will also be presented at the Transportation Research Board annual conference of 2006. The tool was published in the TRB Record Journal, Issue Number 1902, in October of 2005.

The Researchers

Principal Investigators

Anne Vernez Moudon, Ph.D.
D. W. Sohn, Interdisciplinary Ph.D. Program
in Urban Design and Planning
Department of Urban Design and Planning
PO Box 355740
Seattle, WA 98195

Email: moudon@u.washington.edu

Phone: 206-685-4057

Technical Monitors

Sarah E. Kavage
Jean E. Mabry
Washington State Department of Transportation
Urban Planning Office
401 2nd Avenue South, Suite 300
Seattle, WA 98104

Phone: 206-464-1266

For more information, contact Kathy Lindquist, Research Manager, Office of Research and Library Services, at (360) 705-7976.

▲

Gray Notebook

The *Gray Notebook* is published quarterly by the Washington State Department of Transportation to track a variety of performance and accountability measures for review by the Transportation Commission and others.

The following is a sampling from this document. For an on-line version of this or previous editions of the *Gray Notebook*, visit http://www.wsdot.wa.gov/accountability/

Washington State
Department of Transportation

Measures, Markers and Mileposts

The Gray Notebook for the quarter ending
March 31, 2006

5 Year Anniversary Edition

WSDOT's quarterly report to the Governor and the
Washington State Transportation Commission
on transportation programs and department management

Douglas B. MacDonald
Secretary of Transportation

Highway Maintenance: Annual Update

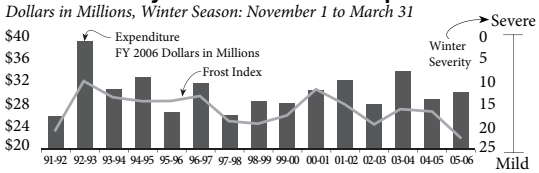
2005-2006 Post Winter Report

While the numbers of average temperatures and precipitation totals are adding up to a statewide winter that is not out of the ordinary compared to winters past, a few extraordinary events made it feel far from routine. Two major rock fall incidents on I-90, one solid month of record-breaking rainfall in western Washington, and greater-than-average mountain snowfall have given WSDOT crews and the traveling public some challenging obstacles to overcome.

Snow and ice control expenditures in the maintenance program are related to the severity of the winter. While this past winter was characterized by some unique weather events, the frost index shows that across the state, Washington had a milder-than-average winter. The frost index is a winter severity rating based on daily temperature information gathered from 29 weather stations around Washington State. Rising costs of deicers, their increased utilization to provide better road conditions, and higher resource deployment in mountain passes pushed winter maintenance costs higher compared to the milder-than-average winter severity rating. A lower numerical rating means more sub-freezing temperatures (along with the associated snow and ice) while a higher numerical rating means less sub-freezing temperatures.

Winter Severity and Snow and Ice Expenditures

Dollars in Millions, Winter Season: November 1 to March 31



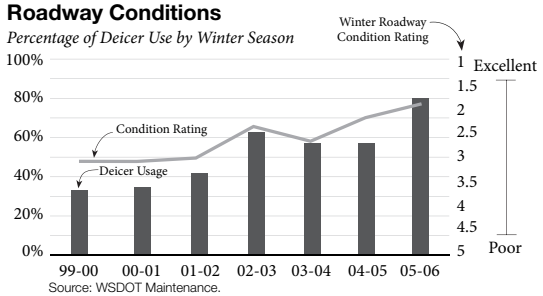
Source: WSDOT Maintenance.

Improving Winter Road Conditions

One of the best strategies to keep roadways clear and safe is to prevent snow and ice from accumulating and bonding to the pavement. WSDOT does this by applying deicing agents. Liquid or solid deicer chemicals stop ice crystals from bonding with the road surface, thereby preventing frost, black ice, and compact snow. While deicer agents are not a cure-all for hazardous winter road conditions, they are an increasingly important alternative to plow-and-sand techniques traditionally used by highway maintenance crews.

Statewide Deicer Use and Winter Roadway Conditions

Percentage of Deicer Use by Winter Season



Source: WSDOT Maintenance.

Evaluating Roadway Conditions

Through March 31st, maintenance crews documented 22,147 road treatments to help improve winter road conditions statewide. Maintenance crews used deicers during 17,676 (80%) of these treatments, and sand on the remaining 4,471 treatments. A higher percentage of deicer use leads to better road conditions. This in turn leads to improved safety, fewer road closures, and reduced need for studded tires.

WSDOT measures its snow and ice control performance by assessing the travel conditions at random locations throughout the state highway system during winter. Through weekly field surveys at these locations, road conditions are evaluated and rated on a scale of one (road conditions with best traction) to five (road conditions with least traction). Over the last few years, increased deicer use and improved techniques have correlated to a higher level of service for snow and ice control.

Above-Average Mountain Snowfall

Mountain pass highways experienced above-average levels of snowfall this winter which required creative solutions, such as shifting resources and traffic flow management.

Shifting Resources

Due to limited resources, WSDOT maintenance moves personnel and snowplows to different places in extreme winter conditions. This season, WSDOT relied on this tactic more than ever before. Resources are typically shifted from the lowlands to the mountains in advance of snowstorms that are projected to dump six or more inches in less than a 12-hour period. Shifting resources can provide mountain passes with as many as 20 additional snowplows. This allows for more frequent deicer applications and more effective snowplow runs, with up to five plows operating in tandem.

Traffic Flow Management

One of the biggest risks during heavy snowfall at Snoqualmie Pass is multiple-vehicle accidents caused by traffic bunching up behind slowed cars or trucks. A single spinout under these conditions can easily lead to a chain-reaction pileup, requiring the pass to be closed for extended periods. To reduce the risk of pass closures during severe weather, WSDOT adapted a new process from California to regulate the number of vehicles crossing a mountain pass in a given time, called Traffic Flow Management (TFM). TFM involves the temporary reduction of lanes available to traffic at a point below the Snoqualmie Pass summit, with traffic released from the lane restriction in

Highway Maintenance: Annual Update

a way that naturally spaces out vehicle flow over the pass. This minimizes the chance of large scale accidents and aids in snow removal.

Incident Response Program

WSDOT's Incident Response (IR) Program got its start in the urban areas of the Central Puget Sound region where IR vehicles could quickly respond to accidents to help clear roads and keep traffic moving. The IR program has since moved up into the mountain passes. The North Central region provides an IR truck during the winter months to help motorists on Stevens Pass. Due to large amounts of truck traffic using Snoqualmie Pass, WSDOT teamed up with the Washington Trucking Association to provide a specially-outfitted truck to help push trucks up and over the summit during tough, winter road conditions. Dubbed IRXtreme, this truck has a special bumper for pushing large trucks and is loaded with weights and chains to gain traction in the worst of road conditions. In one day this winter, IRXtreme pushed 26 big rigs up the eastbound steep grade just below Snoqualmie Summit. (For additional information on the Incident Response Program, see p. 61.)

Avalanche Control

Heavy snowfall in the mountains followed by rain or warm weather increases avalanche hazards. WSDOT oversees a comprehensive program to control when and how the unstable snow pack above the roadway is brought down. This year WSDOT performed 87 avalanche control missions to decrease the hazard of avalanches for travelers and reduce the duration of winter highway closures. Avalanche control teams are stationed at Hyak near the summit of Snoqualmie Pass on I-90 and at Berne Camp near the summit of Stevens Pass on U.S. 2. This work is best completed proactively when snow is becoming unstable, and completed during non-peak traffic hours.

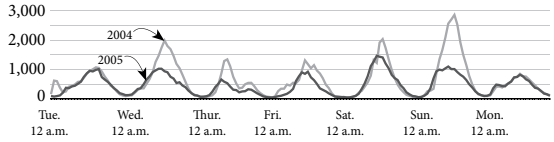
Rockfalls on I-90

Two major rockfalls in September and November 2005 on Snoqualmie Pass made keeping the pass open especially difficult for crews this season. Maintenance staff provided the initial response by clearing fallen rock from the roadway. WSDOT hired contractors on an emergency basis to stabilize the roadside slope that still presented a hazard to motorists. Next, crews established traffic controls to maximize travel mobility and workzone safety, and also set up portable cameras connected to the WSDOT website to provide round-the-clock images of the workzone and nearby traffic conditions.

WSDOT joined forces with the Washington State Patrol and the Governor's office to ask motorists not to travel Washington's main eastwest freeway through the Cascades over the Thanksgiving Day holiday. WSDOT staffed a communications crew at the Hyak Shed throughout the weekend to assist the media. Radio and television stations received hourly updates and, as shown in the chart below, the message resonated with the public, as traffic volumes were down from 2004. While the chart below shows traffic volumes during Thanksgiving week in 2004 and 2005 for westbound Snoqualmie pass, eastbound Snoqualmie pass showed similar results.

Snoqualmie Pass Westbound

Traffic Volumes, Thanksgiving Week



Source: WSDOT Maintenance.

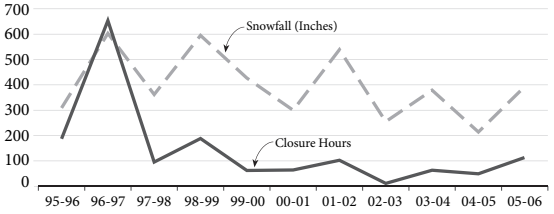
Keeping Snoqualmie Pass Open

I-90 over Snoqualmie Pass, which experiences both heavy automobile and truck traffic, presents maintenance crews with unique challenges. Its elevation is high enough to assure significant snowfall amounts (400 inches per year), but low enough that the snow is usually the hard-to-handle, heavy, and wet variety of snow. Because Snoqualmie Pass is the main east-west Interstate highway over the Cascades, the impact of pass closures is significant (see Trucks, Freights, and Goods on p. 46 for more information). The chart below presents a record of closures and snowfall affecting Snoqualmie Pass over the last decade.

Snoqualmie Pass Winter Closure Hours

Interstate 90 Winter Seasons, 1995 to 2006

Accumulated Annual Hours and Inches of Snowfall



Source: WSDOT Maintenance.

This past winter's snowfall on Snoqualmie Pass was nearly 50 inches above average and pass closure times were up compared to last year's low-snow winter. In the 2005-2006 winter season, Snoqualmie Pass was closed for 134 hours, compared to 49 hours in the 2004-2005 winter season. A new traffic management concept, called Traffic Flow Management (TFM), was implemented at Snoqualmie Pass this year to keep closure times as low as possible.

Highway Maintenance: Annual Update

Record Rainfall Impacts Roads

Precipitation levels peaked throughout western Washington for a few weeks in December and January. Olympia experienced the third wettest January ever, and broke the record for consecutive rainfall with 34 days. Statewide, the rains resulted in 92 slides on state highways. The photos and descriptions below highlight the impact of heavy rains on WSDOT's maintenance crews as mud and debris must be cleared and roadways repaired.

SR 107, Near Montesano in Grays Harbor County

Severe roadway damage from heavy rains forced the closure of this section of roadway on December 29. Sections of the highway surface cracked and buckled, and the roadway slid horizontally as much as 25 feet. Once the slope stabilized, crews established a temporary gravel road so traffic could get through once again. The road was reopened by Friday, January 13. WSDOT placed road signs directing motorists to reduce speed to 35 mph in both directions of SR 107 leading up to the slide area. A lighted stop sign was installed at each end of the gravel section. After stopping, motorists could proceed at 10 mph through the section. WSDOT did not have to place load restrictions on the gravel road.

Buckling of the roadway surface on SR 107.

SR 20, East of Concrete in Skagit County

WSDOT closed the road January 10 when more than 10 dump truck loads of mud and debris slid off the hillside and onto the road. Crews were able to open all lanes of SR 20 east of Concrete on January 11.

WSDOT crews clear trees, mud and debris on SR 20 east of Concrete in Skagit County.

SR 9 near Acme (East of Bellingham) in Whatcom County

WSDOT closed all lanes of SR 9 north of Doran Road on Friday, February 3 after saturated soil beneath the road moved, causing the road to sink, opening a 300-foot long crack. The same thing was happening to the south, but on a smaller scale. Repairs addressed the underlying structure of the roadway. WSDOT crews reopened SR 9 to traffic February 28, after nearly four weeks of emergency work and total road closures. Crews worked seven days a week to complete the project and good weather contributed in helping to finish early.

SR 9 in Whatcom County just south of Acme. The road is shifting and sinking. There is a 300-foot long crack in the road.

SR 105 at Washaway Beach in Pacific County

SR 105 was closed to traffic when eight feet of embankment was eroded by unusually high tides and stormy weather on December 20. Repairs were completed and the road was re-opened for traffic on January 29.

SR 105 Washaway Beach, washes away.

For more information on the 2005-2006 winter season see the WSDOT Maintenance folio, *A Season of Innovation, October 2005 - March 2006* at www.wsdot.wa.gov/maintenance/pdf/WinterFolio_Web.pdf

Travel Information: Quarterly Report

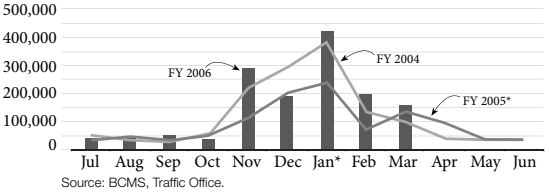
The 5-1-1 Travel Information hotline provides a variety of information affecting travel. This information includes updates on current traffic conditions, incidents, construction activities, mountain pass conditions, and weather conditions. Information can also be obtained on ferry, transit, airline, and railroad service.

5-1-1 Call Volumes Increase Nearly 50%

The 5-1-1 Travel Information hotline received a total of 779,756 calls the first quarter of 2006. This total reflects all the calls made to 5-1-1, 1-800-695-ROAD, and 206-DOT-HIWY. The number of all calls received the previous quarter was 521,833. This is an increase from last quarter of 49.4%, attributable to growing familiarity with the system, and the need for winter and commuter traffic information.

Total Calls to Travel Information*

(5-1-1, 1-800-695-ROAD, 206-DOT-HWY)
3-Year Trend: FY 2004-FY2006



Source: BCMS, Traffic Office.

* Starting January 2005, 1-800-ROAD and 206-DOT-HWY numbers connect directly to 5-1-1, and the call counts are reported in 5-1-1 call total.

5-1-1 Mountain Pass Information

The severity of winter weather and its effect on roadway conditions will spur a greater number of calls to the Travel Information hotline. The busy season for mountain pass information extends from November through April. Call counts normally peak in January, when the weather is most severe.

System Capacity and Enhancements

Large call volumes can constrain the capability of the 5-1-1 system. In December 2005, WSDOT made important enhancements to increase peak call capacity and provide easier access. These improvements last quarter increased service capacity to customers (for additional information, see the *Gray Notebook*, December 31, 2005, p. 43).

In January of 2006, the WSDOT Ferry System installed a new customer information system in Seattle for the Ferry System This system will work as a back-up to the 5-1-1 hotline to assure access in the event of an earthquake, or other natural disaster.

On the WEB

WSDOT's travel information website provides real-time road and weather conditions to the traveling public. On-line information includes roadway incidents, construction event updates, mountain pass information, and weather information.

Site Growth Hits All Time High

The first quarter of 2006 averaged four million daily page views. It is the first time the site averaged four million daily page views for three consecutive months. This is a 67% increase compared to the same period last year. The first quarter average in 2005 was 2.4 million daily page views. The rate and depth of snowfall in the passes impacts how much the site is used.

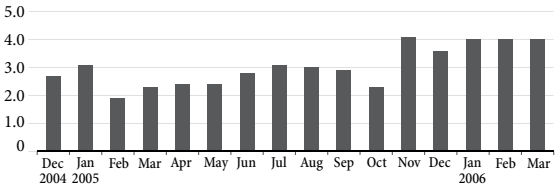
Skyrocketing Growth Since 2004

The growth of WSDOT's travel information website is skyrocketing. In 2005, the website received 1.1 billion page views. This is a 41% increase compared to the previous year total of 735 million, and a 77% increase over the 2003 total of 522 million.

This success is requiring WSDOT to make significant infrastructure changes. Bandwidth, or the amount of data that can be sent from one computer to another, suffers during periods of high use. Twice this quarter, WSDOT had to make infrastructure changes to enable customers to access and use WSDOT's web pages.

Website Usage

Average Daily Page Views: December 2004 to March 2006
In Millions



Source: WSDOT Communication Office

Note: A page view is counted each time a visitor views a webpage on WSDOT's website. Each time a page is refreshed in a user's browser, a page view is recorded. Pages are comprised of numerous files. Every image in a page is a separate file. When visitors look at a page, they may see numerous images, graphics, pictures, etc., generating multiple hits by a user. For example, a page with 10 pictures will generate 11 hits (10 pictures and one for the html file). This is the reason WSDOT tracks page views and not hits.

Expanded Vancouver/Portland Traffic Site

WSDOT and the Oregon Department of Transportation (ODOT) partner to provide access to traffic cameras, travel alerts, and traffic flow maps from a single website to drivers on both sides of the Columbia River. The existing Vancouver area traveler information website now includes traffic impacts and closures on major Vancouver city streets and Clark County roads, as well as, state highways and interstates. The new site can be accessed at www.wsdot.wa.gov/traffic/vancouver.

WSDOT's Capital Project Delivery Programs

Special Report: Tacoma Narrows Bridge, Quarterly Update

New Bridge Construction

As of March 31, design-builder Tacoma Narrows Constructors (TNC) completed 77% of construction on the SR 16 Tacoma Narrows Bridge (TNB) project. During the quarter TNC finished spinning all 19 strands of the south cable and later compacted the cable into its final 20.5" diameter. To achieve the desired shape, TNC brought in four specialized compactors to compress the cable. Standing seven feet high, these 28,000-pound bright blue compactors use six hydraulic jaws to apply 10,000 pounds of pressure onto the wire strands to achieve the exact dimensions for the suspension cable. As the quarter closed, TNC finished placing the permanent cable bands and began hanging the suspender cables from the south main cable. The suspenders will eventually connect the main cable to the bridge deck.

The unused corroded wire that was discovered in November was replaced with wire that arrived from fabricators in South Korea, England, and China. The new wire allowed TNC to resume spinning the north cable on March 13. As of the end of March, TNC completed 13 of the 19 required strands on the north cable.

In South Korea, fabrication of the 46 bridge deck sections is 95% complete. The first 16 sections are scheduled to arrive on site in June, with two other shipments scheduled to arrive over the next four months.

One of four cable compactors used to compact the 19 strands of the south cable into one main suspension cable.

Roadway/Existing Bridge Retrofit Construction

Roadway activities this past quarter included completing landscaping and preparation for the upcoming paving season. Workers prepared mix designs, cleaned up the paving joints, and prepared for some transition zone paving work.

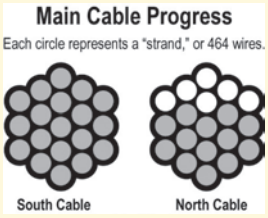
On March 7, WSDOT announced it would build a new on-ramp at 24th Street to eastbound SR 16. Since the new ramp is located after the toll plaza it will be restricted for use only by vehicles equipped with valid electronic tolling transponders. The ramp cost and associated modifications to the new bridge deck is expected to be about $7.5 million. This will be funded from unused contingency monies included in the projects original estimated cost of $849 million.

Tacoma Narrows Bridge Progress as of March 2006

Percent Complete

Design	99.9%
Construction	76.8%
Total	**78.4%**

Source: WSDOT Engineering and Regional Operations Division



Within each main suspension cable are 19 strands comprised of 464 individual wires–totaling 8,816 wires per suspension cable. In January, TNC finished spinning all 19 strands on the south main cable. By the end of March, TNC crews completed spinning 13 strands on the north main cable.

Seismic retrofit work on the existing bridge continued steadily this quarter. Upgrades to the lower wall and foundations in the east anchorage and upgrades to the existing towers and piers at the east approach span were completed. In February and March, crews installed steel jackets on the columns at the east approach span. These jackets were filled with grout for strengthening.

Early morning on March 27, while in the process of demobilizing from night work for seismic upgrades to the tower struts on the existing bridge, a 30-ton crane tipped over. Although no vehicles were involved and no one was injured, the bridge was closed for six and a half hours while WSDOT brought in another crane to assist in a delicate recovery operation as the crane's boom was extending out over the pedestrian railing. The crane's boom damaged the pedestrian railing, but did no damage to the key structural components to the bridge.

Toll Facility, Installation and Operations

In late January, the first of three major system tests occurred on the future electronic and manual toll collection system to be used on the new bridge. TransCore, the company hired by WSDOT to design, operate, and maintain toll collections, conducted tests for WSDOT management and staff at their San Diego facility. The tests were performed under test traffic conditions at a facility built to mimic the newly constructed SR 16 toll plaza. Testing included monitoring the performance of equipment that WSDOT will use for electronic toll collection and manual toll collection.

On February 1, WSDOT issued a Notice to Proceed (NTP) to TransCore for the Toll Systems Operation Agreement. This agreement allows TransCore to operate the tolling system on the TNB for five years.

News from FHWA Washington Division

By Liana Liu, P.E., PTOE
Traffic and Safety Engineer
FHWA Washington Division

WSDOT Awards Toll Collection Contract for Tacoma Narrows Bridge

WSDOT has awarded a five-year contract to TransCore to provide a comprehensive technology and services solution for toll collection on the new Tacoma Narrows Bridge. The tolling system is slated to be operational in spring 2007 when the new Tacoma Narrows Bridge opens. When in full operation, WSDOT will deploy three high-speed open-road tolling (ORT) lanes as well as six additional manual lanes, allowing motorists to pay using cash, credit card, or wireless tag payment. TransCore's Forte™ software will be used to manage the toll system, process transactions, manage lanes, enforce toll violations, and link together the Tacoma Narrows Bridge toll collection system, store fronts, and back office operations.

FHWA Resource Center LRFD Training

FHWA assisted Virginia and North Carolina with training for Load and Resistance Factor Design (LRFD) for bridges, with two one-day steel bridge design seminars that were developed and delivered by the FHWA Resource Center in partnership with the National Steel Bridge Alliance. FHWA and AASHTO have set a target date of October 1, 2007, for all bridges to be designed in accordance with the state-of-the-practice design provisions embodied in the LRFD Specifications. Use of the LRFD Specifications will result in more uniform and safer bridge designs. The "just-in-time" training seminars provided by the Resource Center were specifically developed to aid the state to train bridge design specialists in the new design philosophy.

Operations/ITS/JPO: Frequently Asked Questions and Answers regarding the Work Zone Mobility and Safety Rule Now Available

The Office of Operations Work Zone (WZ) Team has developed a set of frequently asked questions (FAQ) and answers about the Rule on Work Zone Safety and Mobility (available on the WZ Rule website at **http://www.ops.fhwa.dot.gov/wz/resources/final_rule.htm**

AASHTO's Cable Median Barrier Website

Cable barrier is a cost-effective flexible traffic barrier that is ideally suited for use as a retrofit design in existing relatively wide and flat medians to prevent cross-over crashes.

AASHTO's Technology Implementation Group has developed a website, which contains presentations by FHWA and five states. More information can be found at **http://www.ncdot.org/doh/preconstruct/traffic/reports/AASHTO/default.html**

WST2 Resources

Free Publications for State of Washington Residents

Name | Agency

Mailing Address | City | State | Zip+4

Phone | Fax | E-mail

Order direct from the WSDOT home page:

http://www.wsdot.wa.gov/TA/T2Center/T2PUBS.htm

Or you may fax the pages to (360) 705-6858; or mail the pages to WSDOT, WST2/H&LP, PO Box 47390, Olympia, WA 98504-7390; or e-mail your request to WST2Center@wsdot.wa.gov; or phone (360) 705-7386.

☑ ***Check the items you would like to order.***

Free Hard Copy Publications

- ❑ Asphalt Seal Coats, WSDOT, 2003
- ❑ Asset Management Primer, FHWA, 1999
- ❑ Building Projects that Build Communities, WSDOT, 2003
- ❑ Data Integration Primer, FHWA, 2001
- ❑ Disaster Preparedness Handbook, WA Military Dept. and WA DOH, 2005
- ❑ Dust Control on Low Volume Roads, FHWA, 2001
- ❑ Dust Palliative Selection and Application Guide, USDA, 1999
- ❑ Entering the Quiet Zone, FHWA, 2002
- ❑ Everyone is a Pedestrian, FHWA, 2001
- ❑ Family Emergency Preparedness Plan, 1999
- ❑ Fish Passage Through Culverts, FHWA, USDA, 1998
- ❑ General Field Reference Guide (Pocket Size), 2004
- ❑ Gravel Roads Maintenance and Design Manual, South Dakota LTAP, 2000
- ❑ Highway Design Handbook for Older Drivers and Pedestrians, FHWA, 2001
- ❑ Highway Finance and Public-Private Partnerships – New Approaches to Delivering Transportation Services, FHWA, 2005
- ❑ HMA Pavement Smoothness, FHWA, 2002
- ❑ Improving Conditions for Bicycling and Walking, FHWA, 1998
- ❑ Improving Highway Safety at Bridges on Local Roads and Streets, FHWA, 1998
- ❑ Incident Command System for Transportation Professionals, FHWA, 2006
- ❑ Increasing Physical Activity Through Community Design, 2002
- ❑ Maintenance of Aggregate and Earth Roads, WST2 Center (1994 reprint)
- ❑ Pavement Markings, FHWA, 2002
- ❑ Pavement Preservation Checklists, FHWA, pocket guides:
  1. Crack Seal Application
  2. Chip Seal Application
  3. Thin Hot-Mix Asphalt Overlay
  4. Fog Seal Application
  5. Microsurfacing Application
  6. Joint Sealing Portland Cement Concrete Pavements
  7. Diamond Grinding of Portland Cement Concrete Pavements
  8. Dowel-Bar Retrofit for Portland Cement Concrete Pavements
  9. Partial-Depth Repair of Portland Cement Concrete Pavements
  10. Full-Depth Repair of Portland Cement Concrete Pavements
  11. Hot In-Place Asphalt Recycling Application
  12. Cold In-Place Asphalt Recycling Application
  13. Slurry Seal Application
- ❑ Pavement Surface Condition Field Rating Manual for Asphalt Pavement, NWPMA and WSDOT, 1999
- ❑ Pedestrian Safety for the Older Adult (65+), NHTSA
- ❑ Portable Changeable Message Sign Handbook (PCMS) FHWA, 2003
- ❑ Prefabricated Bridges 2004: Good Business-Best Practice, AASHTO TIG/FHWA
- ❑ Priority Market-Ready Technologies and Innovations – 2006 List, FHWA
- ❑ PCC Pavement Smoothness, FHWA, 2002
- ❑ Reflective Sheeting Identification Guide, FHWA, 2005
- ❑ Road Sign Symbols, FHWA, 2002
- ❑ Roadway Safety Tools for Local Agencies, NCHRP, Synthesis 321, TRB, 2003
- ❑ Scenic Byways Map of Washington State, 2003
- ❑ School Administrator's Guide to School/Walk Routes and Pedestrian Safety, WTSC, 2003
- ❑ The 2001 Nisqually Earthquake – Lessons Learned, WSDOT, 2001
- ❑ Traffic Control Handbook for Mobile Operations at Night, FHWA, 2003
- ❑ Trail Construction and Maintenance Notebook, USDA Forest Service, 2004
- ❑ A Walkable Community is More Than Just Sidewalks Brochure, FHWA, 2000
- ❑ Washington Bicycle Map, WSDOT, 2001
- ❑ Washington State Highway Map, WSDOT, 2004

- ❑ Wildlife Habitat Connectivity Across European Highways, FHWA, 2002
- ❑ Work Zone Traffic Control Guidelines, WSDOT, 2005

Free Videotapes

- ❑ Air Quality. Conformity in Transportation Planning, FHWA, 1999
- ❑ Danger Signs, 2004
- ❑ Driving Modern Roundabouts, City of Lacey, City of Olympia, and WSDOT, 2002
- ❑ Modern Roundabouts: Tomorrow's Solution for Today's Traffic, City of Bellingham, 2005
- ❑ Protecting Our Pavements: Preventive Maintenance, FHWA, 1998

Free CD ROMs

- ❑ H&LP CD Library, 7th Edition, Summer 2005
- ❑ Bicycle Safer Journey, FHWA, 2003
- ❑ Building Projects that Build Communities, WSDOT, 2003
- ❑ Comprehensive Intersection Resource Library, FHWA
- ❑ Context Sensitive Solutions Documents: Building Projects that Build Communities; Understanding Flexibility in Transportation Design
- ❑ Driver Education Work Zone Awareness Program, ATSSA
- ❑ Driving Modern Roundabouts, City of Lacey, City of Olympia and WSDOT, 2002
- ❑ Emergency Relief Training for Washington State Local Agencies, WSDOT, 2004
- ❑ Endangered Species Act – Build Smart, 2 CD set, FHWA, 2004
- ❑ High Performance Concrete Structural Designers' Guide, FHWA, 2005
- ❑ HRC-BAC: High Performance Concrete Structural Designer's Guide, 2005
- ❑ Inspection of Ground Anchors, FHWA, 2005
- ❑ Introduction to the Inspection of Ground Anchors and Soil Nails, FHWA, 2005
- ❑ Lightly on the Land, FHWA, 2004
- ❑ Managing Pavement Edge Drop-offs, FHWA, 2006
- ❑ Pavement Preservation Toolbox, Strategies for Preventive Maintenance Programs, FHWA, 2005
- ❑ Pavement Preservation 2, State of the Practice, FHWA, 2003
- ❑ School Administrator's Guide to School/Walk Routes and Student Pedestrian Safety, WTSC, 2004
- ❑ Work Zone Safety for Roadway Maintenance Operations, Interactive Training Course Advanced Technology Concepts With Rutgers University
- ❑ WSDOT Engineering Publications CD Library, March 2005

Free DVDs

- ❑ Danger Signs, 2004
- ❑ Dangerous Travelers: Controlling Invasive Plants Among America's Roadways, USFS, 2006
- ❑ Driving Modern Roundabouts, City of Lacey, City of Olympia and WSDOT, 2002
- ❑ Lightly on the Land, FHWA, 2004
- ❑ Pacific Northwest Transportation Technology Expo and Mousetraps
- ❑ Pedestrian Safety, City of Olympia and Washington Traffic Safety Commission, 2004
- ❑ Prefabricated Bridge Elements and Systems, AASHTO, 2005

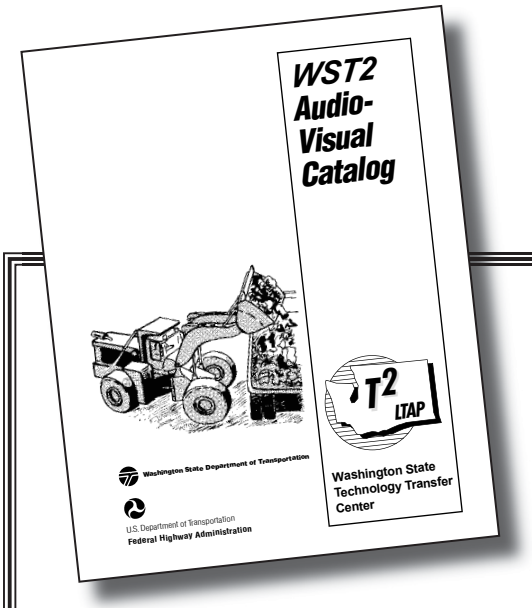
Free Workbooks and Handouts from WST2 Center Workshops

- ❑ Construction Documentation: Construction Training Manual for Local Agencies, WSDOT, 2005
- ❑ Implementing HMA (Superpave) in Local Agencies, WSDOT and FHWA, 2005

Self-Study Guides

These non-credit WSDOT self-study guides may be obtained from the WST2 Center. An invoice will be sent with the books.

- Basic Surveying, $20
- Advanced Surveying (metric), $20
- Contract Plans Reading, $25
- Technical Mathematics l, $20
- Technical Mathematics ll, $20
- Basic Metric System, $20



View the entire WST2 Center's Video Lending Library online!

http://www.wsdot.wa.gov/TA/T2Center/AVC.pdf

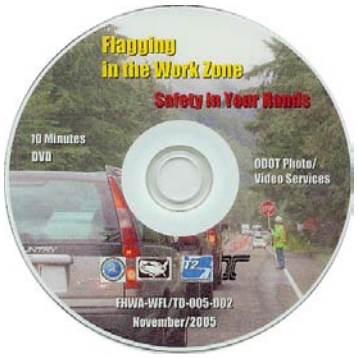
View the list of videos in either numerical order or alphabetical order. Jot down the number of the videos you wish to borrow (up to five), then call the T2 Center at (360) 705-7386 with the video numbers. They will be sent to you for three weeks!

New Videos Featured in the Washington State Technology Center's Video Lending Library

Request by phone: (360) 705-7386 to borrow for three weeks.

Flagging in the Work Zone … Safety in Your Hands #582

Produced by Oregon Photo/Video Services, Oregon Department of Transportation T2 Center & FHWA, November 2005, 10 minutes.



This excellent new DVD covers proper flagging practices and techniques that help make work zones safer for flaggers, workers, and roadway users. The video stresses following the guidelines in the MUTCD. It provides excellent information for flaggers, such as: be visible — place yourself in a spot where oncoming traffic can see you for a long ways. Plan for an emergency — have an escape route perpendicular from the traffic's path. Be professional in your motions; have no clutter around you (lunch box, jacket, cooler, no radio!). Stand sideways to traffic — NEVER turn your back to traffic!

Managing Pavement Edge Drop-Offs … to Improve Safety and Reduce Tort Liability #590

USDOT/FHWA 2005

Managing Pavement Edge Drop-Offs CD-Rom is a multimedia record of the proceedings, presentations, and documentation attendant to the one-day workshop, "Managing Pavement Edge Drop-offs" held in Atlanta, Georgia, on February 11, 2004, and the follow-up Session 370 held January 10, 2005, including two formal papers and the Gwinnett County Shoulder Specifications.

Recommended configuration to enjoy this CD-ROM disc: PIII or higher PC with 256MB RAM (recommend 512MB or better); Microsoft Windows OS 2000/XP; 8x or faster CD-ROM drive (recommend 16x or faster); VGA or higher resolution video; mouse or compatible pointing device; sound card with speakers or headphones.

Dangerous Travelers – Controlling Invasive Plants Along America's Roadways #591

Produced by USDA Forest Service, USDOT FHWA, US Fish & Wildlife Service, and Pennsylvania Department of Transportation, 26 minutes.

This CD-ROM covers the Best Management Practices to assist road maintenance crews in controlling the rapid spread of invasive plants. Items highlighted include plant identification, inventory systems, mapping, mechanical removal, herbicide treatments, weed free products, stockpile maintenance, road maintenance techniques, and cleaning of equipment. It identifies some common plants that are displacing pastures, croplands, and forests and gives us sensible, practical methods of combating their spread.

An old-time Favorite of Washington State Local Agencies:

One Step From Death #352

Produced by the Iowa Department of Transportation, 1995, 11 minutes, VHS and DVD.

This video emphasizes that each person is responsible for his or her own safety in construction work zones, and each must be vigilant of equipment operating nearby and traffic passing close to where he or she is working. Vivid examples show how quickly fatal mistakes can be made, and how workers and drivers could have been more conscious of their surroundings, and more watchful of others to prevent accidents. The message is, "Know where you are!" at all times in a construction zone.

New Videos in Video Lending Library!

The WST2 Center has added new videos, CDs, and DVDs to our Video Lending Library. Here are some of the new additions. Agencies and consultants inside Washington State may borrow up to five at a time for three weeks. Call (360) 705-7386 to order, or e-mail WST2Center@wsdot.wa.gov

❑ 560 **Construction Safety Management Day by Day CD: A New Way to Manage Safety on the Work Site.** In this program, the Construction Safety Council suggests a way to approach safety management on construction work sites. The key elements are: New Hire Orientation, Daily Pre-Work Meetings, Huddles, and Supervisor Involvement. CD, booklet, and Leader's Guide. Suggested checklists and forms.

❑ 561 **Pavement Marking Inspection: Traffic Paint.** 15 min. This video covers the basics of traffic paint application, including material preparation, weather and temperature restrictions, pavement preparation, workmanship, retroreflectivity, and documentation.

❑ 562 **Advanced Warning (Flashing) Arrow Panels: Positive Guidance.** 25 min. This video covers the basic design and use of flashing arrow panels with strong emphasis on correct application and placement. Information on specifications, power supplies, cost, and maintenance procedures is also featured.

❑ 563 **Why Should I Care? (About Traffic Safety).** 7 min. This video, produced by ATTSA's Government Relations, was designed to impress upon Metropolitan Planning Organizations (MPOs) and other agencies with budgeting influence the importance of investing in traffic safety.

❑ 564 **In the Zone: Driving Safely in Work Zones.** 6 min. This fast-paced video by ATSSA, starring NASCAR driver Todd Bodine, is designed to help educate teen drivers about the dangers in roadway work zones. It uses real-life scenarios to explain steps new drivers can take to travel safely through an area of orange cones and barrels.

❑ 565 **Night Lights: How Retroreflectivity Makes Roads Safer.** 10 min. This video puts the technical issue of retroreflectivity into easy-to-understand terms for people outside of the roadway safety industry. It describes how bright, reflective materials on roadways and traffic safety devices save lives by improving roadway definition in several scenarios. It stresses that wearing reflective clothing when outdoors increases personal visibility and safety.

❑ 566 **Leading the Way to Safer Roads.** 10 min. This ATSSA membership video explains the purpose of ATSSA: to make safer roads and save lives. ATSSA helps shape national legislation, offers networking across the traffic safety and road construction industry, helps set national safety standards, and partners with federal agencies.

❑ 567 **Safety Made Simple: ABC's of Work Zone Safety.** 13 min. Awareness, Be Visible, Communicate: Three simple rules that help workers be safe in a work zone. Many accidents are preventable if you live by these three rules. All it takes is one mistake. Know where traffic is; use retroreflective clothing, flashers, and signs, and keep co-workers aware.

❑ 568 **Safety Made Simple: ABC's of Work Zone Safety (Spanish).** 12 min. Awareness, Be Visible, Communicate: Three rules that help workers be safe in a work zone. Many accidents are preventable if you live by these three rules. One mistake can kill. Know where traffic is; use retroreflective clothing, flashers, and signs, and watch out for co-workers.)

❑ 569 **Comprehensive Intersection Resource Library CD.** A compilation of resources re: signalized and unsignalized intersections, roundabouts, grade crossings, etc.

❑ 570 **High Performance Concrete (HPC) Structural Designers' Guide CD.** The guide (in Microsoft Word on CD ROM) addresses all basic aspects of designing, developing, and producing HPC with desirable and beneficial characteristics for the transportation community. Shows HPC grades, characteristics, and cost-effectiveness. See http://knowledge.fhwa.dot.gov/hpc

❑ 571 **Road Risk (DVD) FHWA Road Weather Management Program.** 22 min. This video shows the importance of integrated Intelligent Transportation Systems (ITS) installed along our nation's highways to provide weather condition information to transportation centers for dispatching maintenance equipment and providing travel information to the public, saving lives.

❑ 572 **Driver Education: Work Zone Awareness Program CD.** This CD contains a complete Driver Education program for driving safely through work zones: a PowerPoint presentation, student assessment and certificate, ATSSA movie clips (a girl shares the story of her father's death in a work zone accident), and a pact for students to sign.

❑ 573 **Work Zone Safety for Roadway Maintenance Operations Interactive Training CD.** This interactive CD contains a training course on Roadway Work Zone Operational Safety. The course contents: Introduction, Traffic Control Devices, Traffic Control Zones, Typical Applications (Installing and Removing devices in Work Zones Safely), and Flagging Operations and Procedures.

❑ 574 **Hazardous Materials Labels.** 25 min. This video shows critical information on the safe handling and transporting of potentially dangerous substances. It explains the characteristics of labeling systems and how they each convey information. Types of containers requiring labels, info required, DOT/HazMat classifications, HMIS, & more.

❑ 575 **WSDOT H&LP CD Library 7th Edition Summer 2005.** A collection of Technical Manuals pertaining to Pavements, Road Construction and Maintenance, Highway Safety, and Traffic compiled by the Washington State Technology Transfer Center. Includes Transportation tech notes, Software Applications, WST2 Newsletters and Better Mousetraps.

❑ 576 **Recommended Use of Reclaimed Asphalt Pavement in the Superpave Mix Design Method (CD).** NCHRP Project 9-12, CRP CD 44, including video section. National Cooperative Highway Research Program.

❑ 577 **Solutions for the Field – USDA Forest Service.** 20 min. The mission of the Forest Service Technology and Development Program is the systematic application of scientific knowledge to create new and improved equipment, systems, materials, processes, techniques, and procedures to meet the objectives of forest management and utilization.

❑ 578 **Introduction to the Inspection of Ground Anchors and Soil Nails (CD), self-paced.** This CD covers the basics of inspecting ground anchors and soil nails to secure slopes along highways.

❑ 579 **Inspection of Ground Anchors (CD), self-paced.** This two-CD set explains the details of inspecting ground anchors for retaining walls. Disk 1 covers Preconstruction and Disk 2 covers Construction. Interactive animation, video, practice exercises, and checklists provide field inspectors with background knowledge of ground anchors.

❑ 580 **Lightly on the Land.** 20 min. Public access to our National Parks is the result of partnerships between the USDOT's FHWA, National Park Service, USDA Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs and other agencies. Enjoy this video tour of unique projects inside some of our national treasures.

❑ 581 **Lightly on the Land (DVD).** 20 min. Public access to our National Parks is the result of partnerships between the USDOT's FHWA, National Park Service, USDA Forest Service, U.S. Fish and Wildlife Service, Bureau of Indian Affairs and other agencies. Enjoy this tour of unique projects inside some of our national treasures.

❑ 582 **Flagging in the Work Zone – Safety in Your Hands.** 10 min. This DVD covers proper flagging practices and techniques that help make work zones safer for flaggers, workers, and roadway users. Produced by the Oregon DOT's T2 Center and Photo/Video Services Section, funded by the Western Federal Lands Division of FHWA.

❑ 583 **Anti-Icing/RWIS (Road Weather Information System) Training.** The AI/RWIS Computer-Based Training is a self-paced, interactive multimedia training program that follows sound adult learning principles. The program requires interaction by the student using practice and review exercises, fun facts, and links to key word definitions, a glossary, a knowledge base, and Internet sites. Scenario Room simulated winter events help students hone new skills.

❑ 584 **Pavement Preservation Toolbox CD: Strategies for Preventive Maintenance Programs.** State and local transportation agencies around the USA are adopting pavement preservation programs to extend pavement service life, improve safety, and lower life-cycle costs. This CD presents a range of preservation strategies and preventive maintenance techniques and technical information to managers and engineers, and program information for planners and policymakers.

❑ 585 **Pavement Preservation 2: State of the Practice.** Model program guidelines and technical information from state highway agencies.

❑ 586 **Red Light, Green Light: Intersection Safety.** 8 min. This video provides an increased awareness of the importance of intersection safety. This video allows viewers to identify steps they can take to improve their own safety as well as tell what the transportation profession is doing to create safer intersections.

❑ 587 **It Only Takes a Second.** 5 min. Use this powerful video to show your employees just how easily accidents can happen and the personal consequences of unsafe acts in the workplace. Video covers: fall protection, office safety, industrial safety, driving safety, slips, trips, and falls, box cutter safety, ladder safety, etc.

❑ 588 **Lifelines: Your National Forest Roads DVD.** 32 min. Our National Forests are owned and accessed by all people. This DVD explores the relationship between the people and the land as it celebrates the partnerships between the agencies and communities that provide access to our national forests on a variety of roads.

❑ 589 **Comprehensive Intersection Resource Library (V 3.0) CD.** This CD-Rom is a compilation of resources about traditional signalized and unsignalized intersections, roundabouts, highway/rail grade crossings, and other nontraditional intersection designs.

❑ 590 **Managing Pavement Edge Drop-offs CD.** This CD-Rom is a multimedia record of the presentations made at the workshop, "Managing Pavement Edge Drop-offs" in Atlanta, Georgia, February 11, 2004, and the follow-up Session 370 held January 10, 2005, including two formal papers and the Gwinnett County Shoulder Specifications.

❑ 591 **Dangerous Travelers: Controlling Invasive Plants Along America's Roadways DVD.** 26 min. Best Management Practices to assist road maintenance crews in controlling the rapid spread of invasive plants. Items include plant identification, inventory systems, mapping, mechanical removal, herbicide treatments, weed free products, stockpile maintenance, road maintenance techniques, and equipment cleaning.

On-line Resources

Bridge

- WSDOT Highways & Local Programs
  http://www.wsdot.wa.gov/TA/Operations/BRIDGE/BRIDGEHP.HTM

Environmental

- *Environmental Procedures Manual* (M31-11)
  http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/EPM/EPM.htm
- Regional Road Maintenance Endangered Species Act Program Guidelines
  http://www.metrokc.gov/kcdot/roads/esa/index.cfm
- National Marine Fisheries Service Species Listings and Info
  http://www.nwr.noaa.gov/
- U.S. Fish and Wildlife Service Species Listings and Info
  http://endangered.fws.gov/
- Washington State DNR's Natural Heritage Program Home Page
  http://www.dnr.wa.gov/nhp
- FHWA's Environmental Home Page
  http://www.fhwa.dot.gov/environment/index.htm

Highways & Local Programs Listservs

For the following listservs:

- WST2 Newsletter
- WST2 Training
- Traffic Technology and Safety

Use the following address to sign up:

http://www.wsdot.wa.gov/TA/T2Center/T2hp.htm

WSDOT Materials Lab

- http://www.wsdot.wa.gov/biz/mats

Legal Search

- Search RCWs and WACs
  http://search.leg.wa.gov/pub/textsearch/default.asp

Local Agency Guidelines (LAG) Manual

- http://www.wsdot.wa.gov/TA/Operations/LAG/LAGHP.htm

Pavement Management

- Pavement Publications and NWPMA Links
  http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/PavementTechnology
- NWPMA – North West Pavement Management Association
  http://www.wsdot.wa.gov/TA/T2Center/Mgt.Systems/PavementTechnology/nwpma.html
- Asphalt Institute
  http://www.asphaltinstitute.org/
- National Asphalt Pavement Association
  http://www.hotmix.org/
- Pavement (A Website for Managing Pavements)
  http://www.mincad.com.au/pavenet
- SuperPave Information
  http://www.utexas.edu/research/superpave

Project Development

- Federal Aid Progress Billing Form
  http://www.wsdot.wa.gov/TA/ProgMgt/Projectinfo/BILLFORM.XLS
- State Funded Progress Billing Form
  http://www.wsdot.wa.gov/TA/ProgMgt/Projectinfo/BILLFORM STATE.xls
- STIP (State Transportation Improvement Program)
  http://www.wsdot.wa.gov/TA/ProgMgt/STIP/STIPHP.htm
- TIP (Local Agency 6-Year Transportation Improvement Program)
  http://www.wsdot.wa.gov/TA/ProgMgt/STIP/TIP.html

Research

- WSDOT Research Office
  http://www.wsdot.wa.gov/research
- Looking for a Transportation Research Publication?
  http://gulliver.trb.org
- Municipal Research and Services Center of Washington
  http://www.mrsc.org

Traffic and Safety

- WSDOT Traffic Data Office
  http://www.wsdot.wa.gov/mapsdata/tdo/
- Washington State Patrol
  http://www.wsp.wa.gov
- Washington Traffic Safety Commission
  http://www.wtsc.wa.gov
- National Highway Traffic Safety Administration
  http://www.nhtsa.dot.gov
- American Traffic Safety Services Association
  http://www.atssa.com
- Municipal Research and Services Center of Washington
  http://www.mrsc.org
- Transportation Research Board
  http://gulliver.trb.org

Training

- WST2 Classes
  http://www.wsdot.wa.gov/TA/T2Center/Training/
- WST2 Class Registration
  http://fmapps.wsdot.wa.gov/tbase_registration/
- County Road Administration Board
  http://www.crab.wa.gov/
- American Public Works Association
  http://www.apwa.net/education
- Transportation Partnership in Engineering Education Development (TRANSPEED)
  http://www.engr.washington.edu/epp

WSDOT Local Programs Engineers

- Eastern Region (Spokane)
  Keith Martin, (509) 324-6080, martink@wsdot.wa.gov
- Northwest Region (Seattle)
  Ed Conyers, (206) 440-4734, conyere@wsdot.wa.gov
- Olympic Region (Olympia)
  Neal Campbell, (360) 357-2666, campben@wsdot.wa.gov
- North Central Region (Wenatchee)
  Paul Mahre, (509) 667-3090 or 667-2900, mahrep@wsdot.wa.gov
- South Central Region (Yakima)
  Roger Arms, (509) 577-1780, armsr@wsdot.wa.gov
- Southwest Region (Vancouver)
  (vacant) (360) 905-2215

Other On-line Resources

- Bicycle maps and other information
  http://www.wsdot.wa.gov/bike/
- Pedestrian information
  http://www.wsdot.wa.gov/walk/
- Rural Partnerships and scenic byways information
  http://www.wsdot.wa.gov/TA/progmgt/byways/
- Better Mousetraps
  http://www.wsdot.wa.gov/TA/T2Center/Mousetraps/
- Retired Professional Program
  http://www.wsdot.wa.gov/TA/T2Center/Retired.htm
- LTAP (Local Technical Assistance Program) Clearing House
  http://www.ltapt2.org
- Institute of Transportation Engineers
  http://www.ite.org
- Governor's Office of Indian Affairs
  http://www.goia.wa.gov
- Southwest Interagency Coop-Grounds Equipment Maintenance (GEM)
  http://www.gematwork.org

Washington State T2 Center

Contact: Laurel Gray (360) 705-7355
Wendy Schmidt (360) 705-7386
http://www.wsdot.wa.gov/TA/T2Center/Training

To register for a class in this section, use the contacts listed above.

The class fees shown apply to both public and private sector students. The most up-to-date information on these courses, and a link to the on-line registration form, can be found on the website listed above.

Bridge Condition Inspection Update (BCIU)

2007: February 6-7, Moses Lake; February 20-21, Lacey. **Free.** Instructor: Grant Griffin, WSDOT Bridge Engineer. This course will provide information on the latest inspection manual, Laptop98 bridge inspection software, bridge file records, and other important bridge inspection issues. Sufficiency ratings and proper coding of bridge elements will also be discussed.

Bridge Condition Inspection Fundamentals (BCIF)

2007: February 20-21, Lacey. **Free to Washington State local agencies and consultants. All others $150.** Instructor: Grant Griffin, WSDOT Bridge Engineer. This course is designed to provide basic knowledge of bridge condition inspection, construction materials, material properties, bridge components and nomenclatures, loadings, stresses and strains, and deterioration of bridge materials and members. This course is preparatory for Bridge Condition Inspection Training. Graduate engineers or engineering technicians with bridge experience need not attend.

Bridge Condition Inspection Training (BCIT)

2007: March 12-23, Lacey. **Free to Washington State local agencies and consultants. All others $700.** This course is two full week; attendance both weeks is required. Instruction by WSDOT Bridge, Highways & Local Programs, Hydraulics Section, and FHWA. This course is based on the FHWA "Bridge Inspector's Reference Manual" and will provide extensive training on the condition inspection of in-service bridges. Two comprehensive examinations will be administered: a field exam covering inspection and inventory coding, and a multiple choice classroom exam. Satisfactory completion of this course will fulfill the training requirements of the National Bridge Inspection Standards (NBIS) for a "comprehensive training course" based on the reference manual.

This training is for new bridge inspectors or those who desire a refresher. Non-engineers and people with little or no bridge condition inspection experience are strongly advised to attend the Bridge Condition Inspection Fundamentals (BCIF) class prior to BCIT. Several days in the field.

Construction Documentation

2006: December 6, Vancouver.

2007: January 23, Olympic Peninsula; January 24, Tacoma; February 27, North Seattle; February 28, Shoreline; March 1, South Seattle; March 20, Spokane; March 21, Moses Lake; March 22, Yakima; April 17, Shoreline; April 18, Olympia.

Free. Instructor: Ken Hash, WSDOT SW Region Engineer. Regional Local Program Engineers will be in attendance at each class to answer questions. This course covers three project phases: pre-contract, contract, and post-contract documentation of public works projects with FHWA funding. Local agency and contractor's documentation is discussed, with a strong emphasis on the documentation requirements of the field inspector. On completion of this course, participants will have a working knowledge of: (1) required documentation that will be submitted by the contractor, (2) required documentation for acceptance of contract materials, (3) daily inspector's documentation of the contract work, and (4) source documentation for the monthly progress payment to the contractor.

Context Sensitive Solutions

2007: January 30-31, Seattle; March 6-7, Vancouver. **Free.** Instructors: John Heinley and Robert Kutrich, WSDOT. This course will provide the knowledge and skills to collaboratively develop transportation projects addressing the needs of a broad range of users and interested parties. Participants will learn to identify critical issues, involve stakeholders, evaluate alternatives and minimize tort liability when developing solutions to transportation issues that are specific to individual sites.

Contract Specification Writing

2006: September13, Shoreline; October 19, Tumwater; November 7, Bellingham. **$75.** Instructor: Steve Boesel. This class will provide guidance and methods for writing consistently clear, concise, complete and well formatted contract special provisions. It will provide a thought process that can be used when writing or reviewing contract specifications to ensure the greatest possibility for a successful bid and a successful construction project.

Cultural Resources Training

Sessions are scheduled for May and October every year. The Dalles, OR. **$350.** Three and a half days of training. This training will introduce participants to the value and significance of Washington's irreplaceable cultural resources. The class provides an exceptional opportunity for local agencies to work with the northwest's most qualified instructors, visiting some of the area's finest examples of cultural resources and attending the only statewide training session of this caliber. For any individual who wants to become knowledgeable about cultural resources and possess the necessary skills to address basic resource management problems associated with cultural resources. Call the T2 office to have your name placed on a wait list for the next class; this course is not available for on-line registration.

Full Depth Recycling

2006: October 31, Spokane; November 1, Kennewick; November 28, Lacey/Tumwater; November 29, Shoreline. **Free.** This seminar will present state-of-the-art information on Full Depth Recycling (FDR) and Cement Recycled Asphalt Base Stabilizer (CRABS) that can be utilized to save time and natural resources in the rehabilitation and reconstruction of asphalt roads. Also included will be case studies of projects that illustrate why FDR is an excellent choice for rebuilding roads. From specifications to step-by-step construction considerations, a wide range of topics regarding road reconstruction will be included in this program.

Pavement Condition Rating

2006: September 12-13, Tacoma. **Free.** Instructor: Bob Brooks, WST2 Pavement Engineer. Participants will learn to rate any of the pavements commonly found in Washington. The rating values obtained using the definitions and methods learned in this course should compare favorably with those obtained and used in the Washington State Pavement Management System. Upon completion each participant should be able to perform a pavement condition survey with reasonable objectivity.

Preparing Your ECS for NEPA Approval

2006: September 19, Tumwater; October 10, Spokane; October 11, Ephrata; October 25, Vancouver; November 7, Shoreline. **Free.** This course will give a basic understanding of the National Environmental Policy Act (NEPA) and other environmental procedures. The course will predominantly focus on a step-by-step explanation of the Environmental Classification Summary (ECS) – the process and documentation requirements associated with each environmental consideration; the triggers for analysis; and the appropriate responses and level of documentation needed to obtain FHWA's approval. The course will also provide updates to any process, regulatory, and guidance changes that have occurred in the past year.

Purchasing, Bidding and Contract Management

2006: November 15, Lacey. **$75.** Instructor: John Carpita, Municipal Research & Services Center of Washington.

Topics:

- Purchasing and bidding overview – statutes that affect local agencies in purchasing goods, materials and services.
- Public works contracting – procedures, checklists, files; contract documents; bidding and contract award issues; contract administration and closeout; retainage and bonding; sales and use tax issues; exemptions; small works projects; emergency contracts; prevailing wage issues; contractor licensing, bond and insurance requirements.
- Consultant selection – types of consultants; quality-based selection vs. bids; selection process; contract negotiations.

Troubleshooting Roundabout Design

2006: September 19-20, Shoreline; September 26-27, Pasco. **$250.** Instructors: Patrick McGrady and Rachel Price, Reid Middleton, Inc. Students will participate in hands-on roundabout design. Exercises include site specific conditions that influence the choice of roundabout control. Students will troubleshoot roundabout designs to identify and remove fatal flaws and refine the design for safe efficient traffic operations. Instructors will show how to establish a balance between design elements and avoid common pitfalls in single and multi-lane roundabout design that rob capacity and contribute to collisions. The second day of class will offer roundabout plan review exercises, detailed design exercises, and cover challenges and solutions of multi-lane roundabout design. The class will also include how to assemble roundabout plans to ensure clear communication of critical dimensions and features.

WSDOT Construction and Design Courses

Free. WSDOT courses are available for local agency attendance in the Design and Construction fields. Attendance is limited to cities, counties, ports, tribes, transit agencies, and consultants acting as official city engineer. Classes are offered in Seattle, Olympia, Vancouver, Yakima, Wenatchee, and Spokane. Each course generally offers six to eight class sessions per year with 20% of the seats in each class being reserved for local agencies, the rest are for WSDOT employees. All classes are posted on the WST2 training website as they become available and registrations are accepted online. You will find more information on our website along with descriptions for these courses. Classes will begin this fall with the Design courses scheduled for September through March, and Construction classes scheduled for January through May. The courses offered are:

- Design
  - Roadside Safety (B74)
  - Project Management Process (B71)
  - WSDOT Interchange Design (CFU)
  - Intersection and Pedestrian Design (CBD)
  - Roadway Geometric Design (BWE)
- Construction
  - Excavation and Embankments Inspection (AC3)
  - Nuclear Gauge Safety and Operation (ALG)
  - Nuclear Gauge, Embankment/Surfacing/Pavement Applications (ANQ)
  - Electrical-Illumination and Signals (API)
  - Drainage Inspection (ACF)
  - Hot Mix Asphalt Placement (ACB)
  - Bridge Structures Inspection (ACM)
  - Bridge and Structures Inspection 201 (CQ9)
  - Bituminous Surface Treatment Inspection (ACC)

TRANSPEED
University of Washington

Contact: Julie Smith
(206) 543-5539, toll free 1-866-791-1275
fax (206) 543-2352
jsmith@engr.washington.edu
http://www.engr.washington.edu/epp

To register for a class in this section, use the contact listed above.

The prices in this section are for public agency/non-public agency.

Access Management
September 19-21, 2006, Lacey. $450/$650

Technical Communication for Transportation Professionals
September 26-27, 2006, Bellevue/Seattle. $300/$500

Managing Consultants
October 3, 2006, Bellevue/Seattle; January 10, 2007, Lacey. $485/$650

Traffic Signal Timing
October 10-11, 2006, Bellevue/Seattle. $340/$540

Legal Liability for Transportation Professionals
October 11-12, 2006, Bellevue/Seattle. $305/$450

Manual on Uniform Traffic Control Devices
October 17-19, 2006, Lacey. $370/$570

Measuring Project Performance
October 24, 2006, Lacey. $470/$670

Hydrology and Basic Hydraulics
October 25-26, 2006, Bellevue/Seattle. $270/$450

Pavement Rehabilitation
October 31-November 2, 2006, Vancouver. $485/$600

Stormwater Engineering for Transportation Professionals
November 7-9, 2006, Bellevue/Seattle. $320/$470

Basic Highway Capacity Analysis for Engineers and Planners
November 14-16, 2006, Bellevue/Seattle. $400/$575

Pavement Design
December 5-7, 2006, Bellevue/Seattle. $400/$585

Fundamentals of Traffic Engineering
December 12-14, 2006, Bellevue/Seattle. $400/$575

Public Works Construction Project Management
January 8-9, 2007, Lacey. $270/$470

Roadway Geometric Design 2: Applications, Methods and Good Practice
January 16-17, 2007, Seattle. $300/$500

Construction Inspection of Public Works Projects
Date and location TBA. $370/$570

Endangered Species Act 4(d) Training Program

The Regional Road Maintenance ESA 4(d) Training Program offered by the University of Washington include the following courses. Check their website for descriptions of courses, and dates and locations of class sessions.

http://www.engr.washington.edu/epp/esa/reginfo.html

Track 2: Introduction, Design and BMPs, Monitoring, and Environmental Roles for Engineering, Technical and Scientific Staff

Track 3: Classroom Introduction to ESA and Outcome-based Road Maintenance for Field Crews

Track 3B: Field Training for Bridge Maintenance

Track 3F : Road Maintenance Crew Training in the Field Environment: Applying Maintenance BMPs

Track 3W: BMPs for in-Water Work

Track 4: Train-the Trainer for The Regional Road Maintenance Program

Other Training Programs

Engineering Professional Programs (EPP)

University of Washington, Seattle

Civil and environmental professional development, engineering review courses.

(206) 543-5539

http://www.engr.washington.edu/epp

Washington Environmental Training Center

Green River Community College, Auburn

Water, wastewater, and other courses of interest to public works departments.

1-800-562-0858

http://www.greenriver.edu/wetrc

Click, Listen and Learn

American Public Works Association

APWA's series of interactive Internet educational programs. Hear it through your speaker phone; see it on your PC. Each program is led by top experts in the field who convey new ideas, new methods, and new technologies in a two-hour time frame. Over 50 past programs can be purchased.

(816) 472-6100

http://www.apwa.net/education/cll/

Washington State Emergency Management Division

Professional Development Series courses, Advanced Professional Series courses, and courses that prepare individuals for disasters ranging from floods, fires, weather storms, earthquakes, and other natural or technological hazards.

(253) 512-7048 or (253) 512-7000

http://emd.wa.gov/

Associated General Contractors (AGC)

Erosion control and stormwater best management practices training.

(206) 284-4500

http://www.constructionfoundation.org

Homeland Security Institute

National Incident Management System on-line classes.

(360) 586-8169

http://www.hsi.wa.gov/

Washington State Department of Personnel (DOP)

Human Resource Development Services

Local agencies are invited to attend all DOP training classes. Courses on health and safety, information technology, leadership, meeting facilitation, oral and written communication, personal development, customer service, sexual harassment awareness.

(360) 664-1921

http://hr.dop.wa.gov/training

Evergreen Safety Council

Traffic control supervisor, traffic control flagger certification, flagger instructor, first aid/CPR, forklift instructor, safety and health training.

(206) 382-4090 or 1-800-521-0778

http://www.esc.org

Washington State Department of Labor and Industries

On-line safety courses, video library, videos on-line, workshops.

(360) 902-5800, 1-800-547-8367

http://www.lni.wa.gov/Safety/TrainTools/default.asp

Conferences

30th Anniversary Public Transportation Conference & Expo

Public Transportation: Delivering Value
August 14-16, 2006, Doubletree Hotel, Bellevue.

For information, contact Amber Clayton, Registration Coordinator, at (360) 705-7877 or claytoa@wsdot.wa.gov

Northwest Pavement Management Association (NWPMA)

Fall Conference: September 18-21, 2006, Tacoma.

For information, contact Bob Brooks, WSDOT, at (360) 705-7352 or brookbo@@wsdot.wa.gov

APWA Conferences

Fall 2006: October 16-20, 2006, Wenatchee Convention Center, Wenatchee. Contact Ruta Jones at (509) 664-3364.

Spring 2007: April 10-13, 2007, Paine Field Air Flight Museum, Everett. Contact David Mandyke at (509) 625-6320 or dmandyke@spokanecity.org

Fall 2007: October 9-12, 2007, The Davenport Hotel, Spokane. Contact David Mandyke at (509) 625-6320 or dmandyke@spokanecity.org

Road and Street Maintenance Supervisors' School

East Side: October 3-5, 2006, Mirabeau Park Hotel, Spokane Valley.

West Side: December 5-7, Doubletree Hotel, SeaTac.

For information, contact Michelle Johnson, Washington State University, at mlj@wsu.edu or (253) 445-4631.

Pacific Northwest Bridge Maintenance Conference

October 4-5, 2006, Seaside, Oregon.

For information, contact Washington State University at wsuconf@wsu.edu or 1-800-942-4978.

46th Annual Idaho Asphalt Conference

October 26, 2006, Moscow, Idaho.

For information, contact the University of Idaho Conferences Services at (866) 651-5322.

Infrastructure Assistance Coordinating Council (IACC)

October 31-November 2, 2006, Wenatchee.

For information, contact Bob Brooks at (360) 705-7325 or brookbo@wsdot.wa.gov

Links to additional information and on-line registration are at: **http://www.wsdot.wa.gov/TA/T2Center/Conf.htm**

AASHTO
Roadside Design Guide, Web-based Training

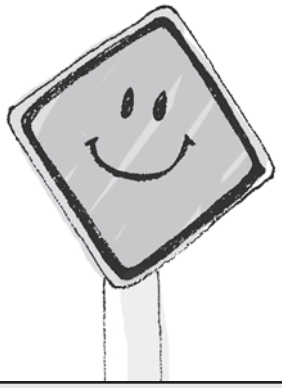
NHI Course Number: 380032C

This web-based course is approximately 14 hours long and is available anytime — 24 hours, 365 days a year via the Internet. The cost for non-FHWA employees is $230 per participant and includes a copy of the 2002 AASHTO "Roadside Design Guide." This course provides an overview of the 2002 AASHTO "Roadside Design Guide." Emphasis is on current highway agency policies and practices. Participants must register on-line at ***http://www.nhi.fhwa.dot.gov/registerdl.asp***

Computer Requirements: You will need a fairly recent version of a browser (such as Internet Explorer 4 or 5 or Netscape 4 with JavaScript enabled), the latest version of Macromedia Shockwave and Flash (which you can download from the Internet), and a connection to the Internet (at least 56K modem). An older computer such as a Pentium 100 would work, but it would be slower than a Pentium III. For more information, visit ***http://www.nhi.fhwa.dot.gov***

Sign of the Times

While this certainly isn't in Washington State (), we have left the location confidential to protect the innocent or well-intentioned traffic engineer.



Sign of the Times

Do you have a humorous traffic sign to share? Send us a print or e-mail a digital image (preferably a 300 dpi, 1000x1500 dpi jpeg or tif) and we will add it to our collection for publishing. Please provide your name, title, agency or company, and a short description of where and when you saw the sign. We want to give you credit for your participation.

You can e-mail the image to *grayl@wsdot.wa.gov*

Or mail the photo to:
"Sign of the Times"
WST2 Center
PO Box 47390
Olympia, WA 98504-7390

Please don't send your original photo. Although we will do our best to return the photo, we can't guarantee it.

Washington State Technology Transfer Center
WSDOT – H&LP Division
PO Box 47390
Olympia, WA 98504-7390

PRSRT STD
U.S. POSTAGE PAID
Washington State
Department of Printing